

# Crowdsourcing for Disasters

*How government can provide structure to people's natural inclination to share information*



**Denice W. Ross**

Presidential Innovation Fellow at Energy

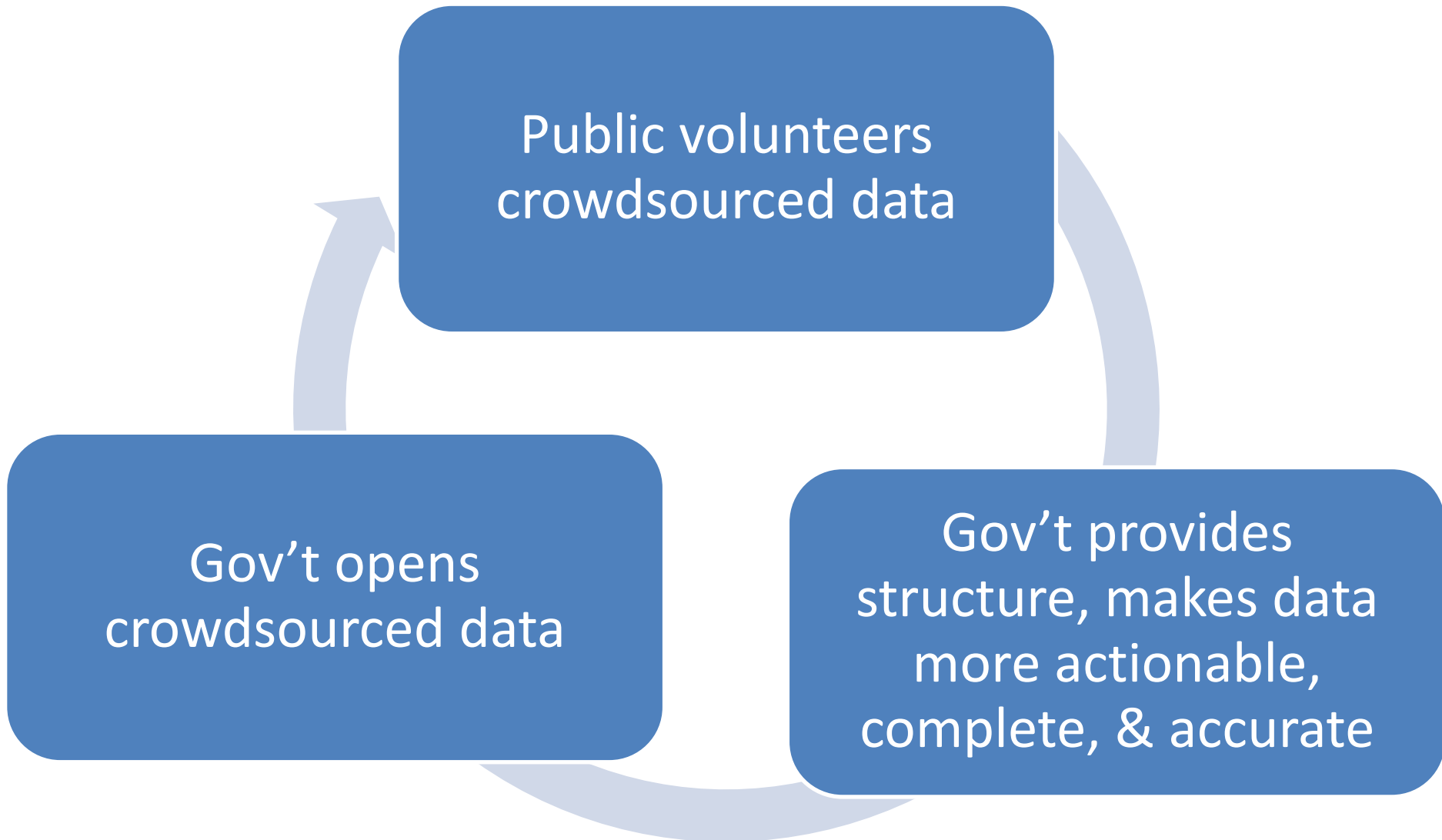
@denicewross

denice.ross@gsa.gov

# Disasters and Data

1. People want to share information
2. The government doesn't have all the information people need
3. People want to help fix their community after a disaster
4. The government can't fix a community on its own

# The Virtuous Circle



# **Case Study from Katrina (long-term recovery)**



[Home](#) » [Orleans Parish](#) » [Lower Ninth Ward District](#) » [Lower Ninth Ward](#) » [Data Tables](#)

## Lower Ninth Ward Neighborhood: Housing & Housing Costs

Data Tables: [People & Household Characteristics](#), **Housing & Housing Costs**, [Income & Poverty](#), [Transportation](#), [Employment](#), [Educational Attainment](#), [Immigration & Language](#), [Disabilities](#), [Neighborhood Characteristics](#)

### Housing characteristics

[Definitions and source links](#)

[E-mail a friend](#)

	Lower Ninth Ward	Orleans Parish	Louisiana	United States
<b>Occupancy status (2000)</b>				
Total housing units ( <i>full count</i> )	5,601	215,091	1,847,181	115,904,641
Occupied housing units	86.1%	87.5%	89.7%	91.0%
Vacant housing units	13.9%	12.5%	10.3%	9.0%
<b>Renters and owners (2000)</b>				
Total occupied housing units	4,820	188,251	1,656,053	105,480,101
Owner occupied	59.0%	46.5%	67.9%	66.2%
<i>The Lower Ninth Ward has a higher rate of homeownership than the city as a whole. Why is that, and what does it mean for the neighborhood? <a href="#">Read these insights from Lower Ninth Ward residents...</a></i>				
Renter occupied	41.0%	53.5%	32.1%	33.8%

Source Citation: U.S. Census Bureau. *Census 2000 Full-count Characteristics (SF1)*. From a compilation by the GNO Community Data Center. <<http://www.gnocdc.org>>

# Hurricane Katrina

August 27, 2005

10 AM CDT Saturday

NWS TPC/National Hurricane Center  
Advisory 17

Current Center Location 24.5 N 85.0 W

Max Sustained Wind 115 mph

Current Movement W at 7 mph

● Current Center Location

● Forecast Center Positions

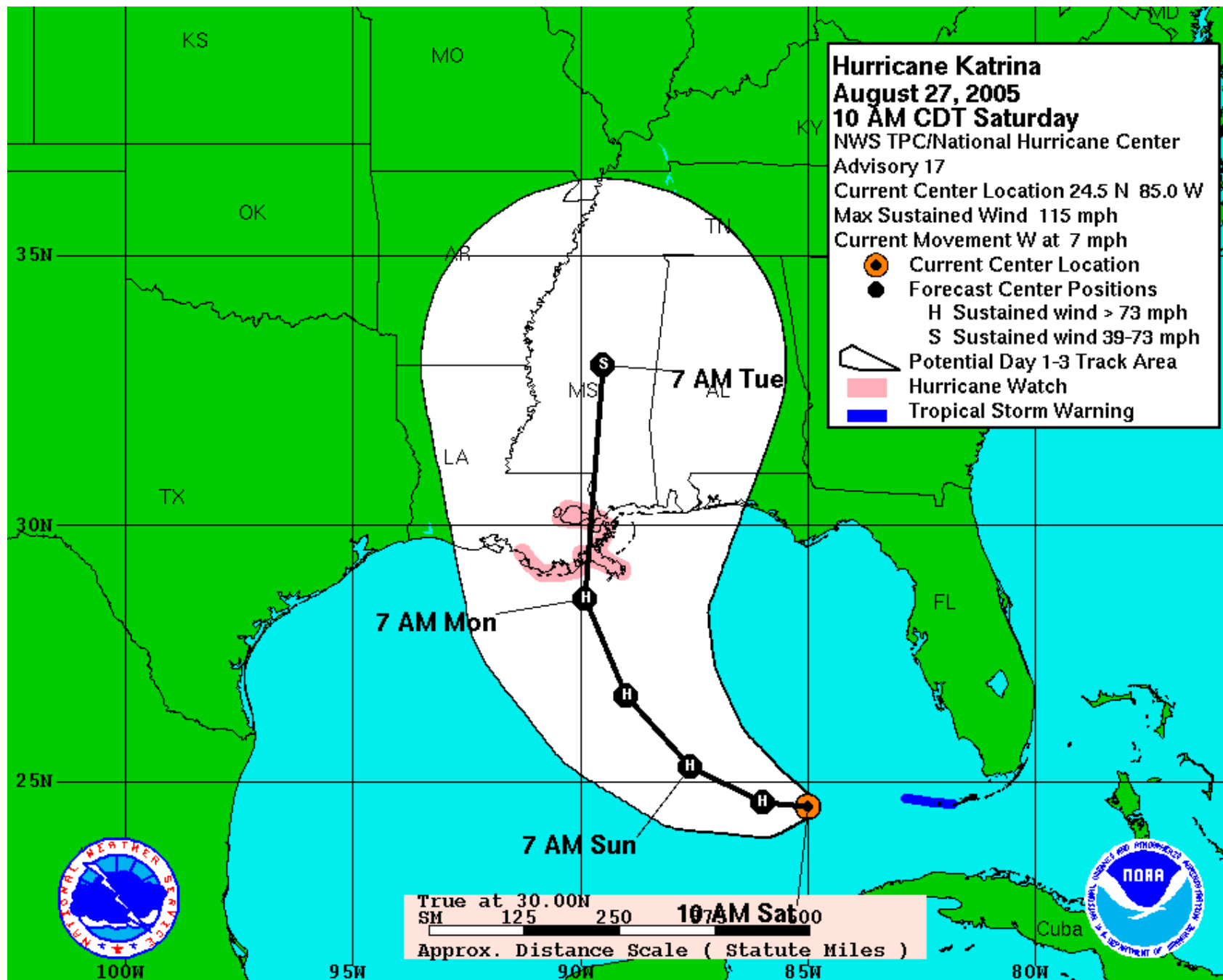
H Sustained wind > 73 mph

S Sustained wind 39-73 mph

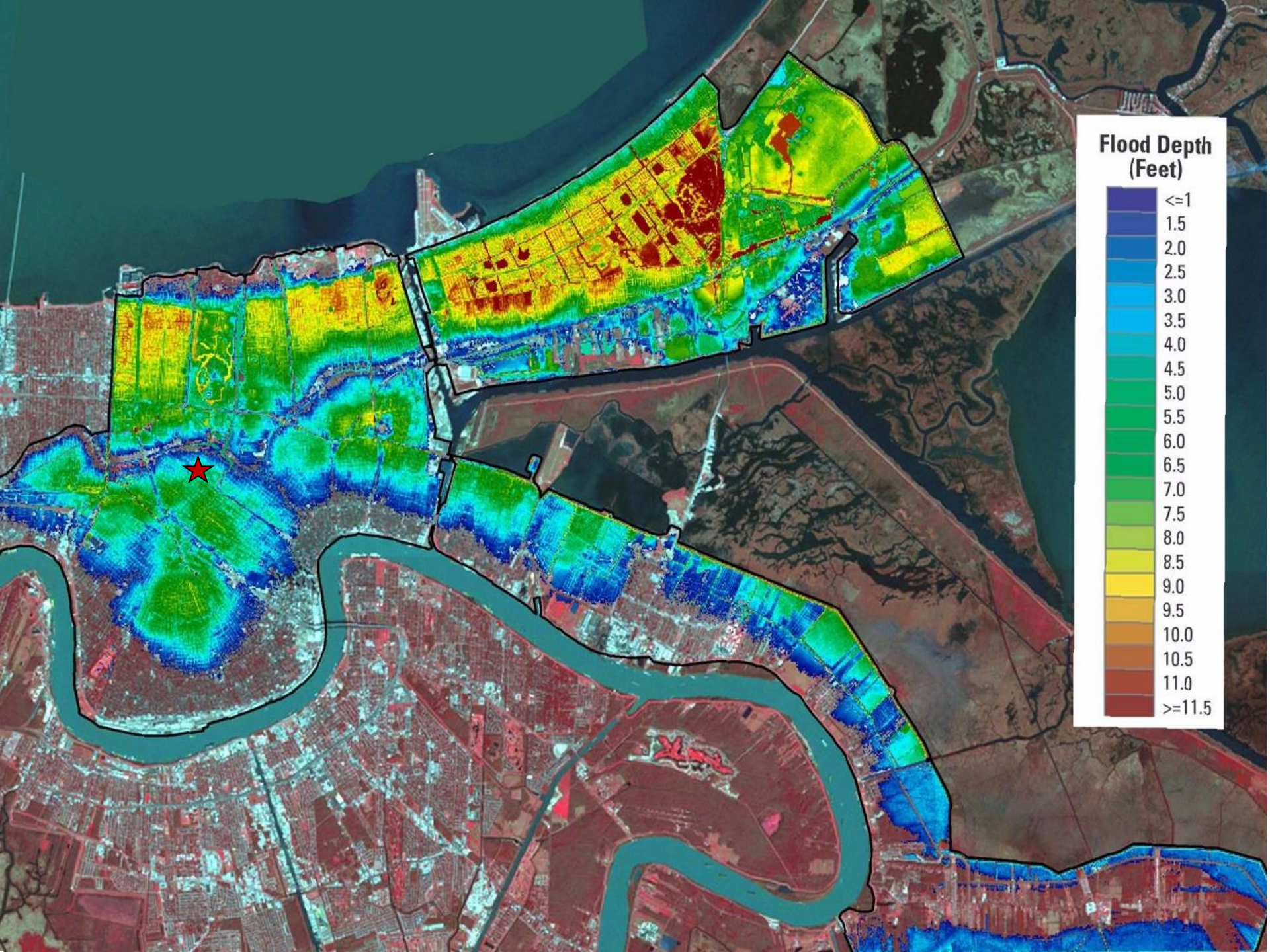
△ Potential Day 1-3 Track Area

■ Hurricane Watch

■ Tropical Storm Warning

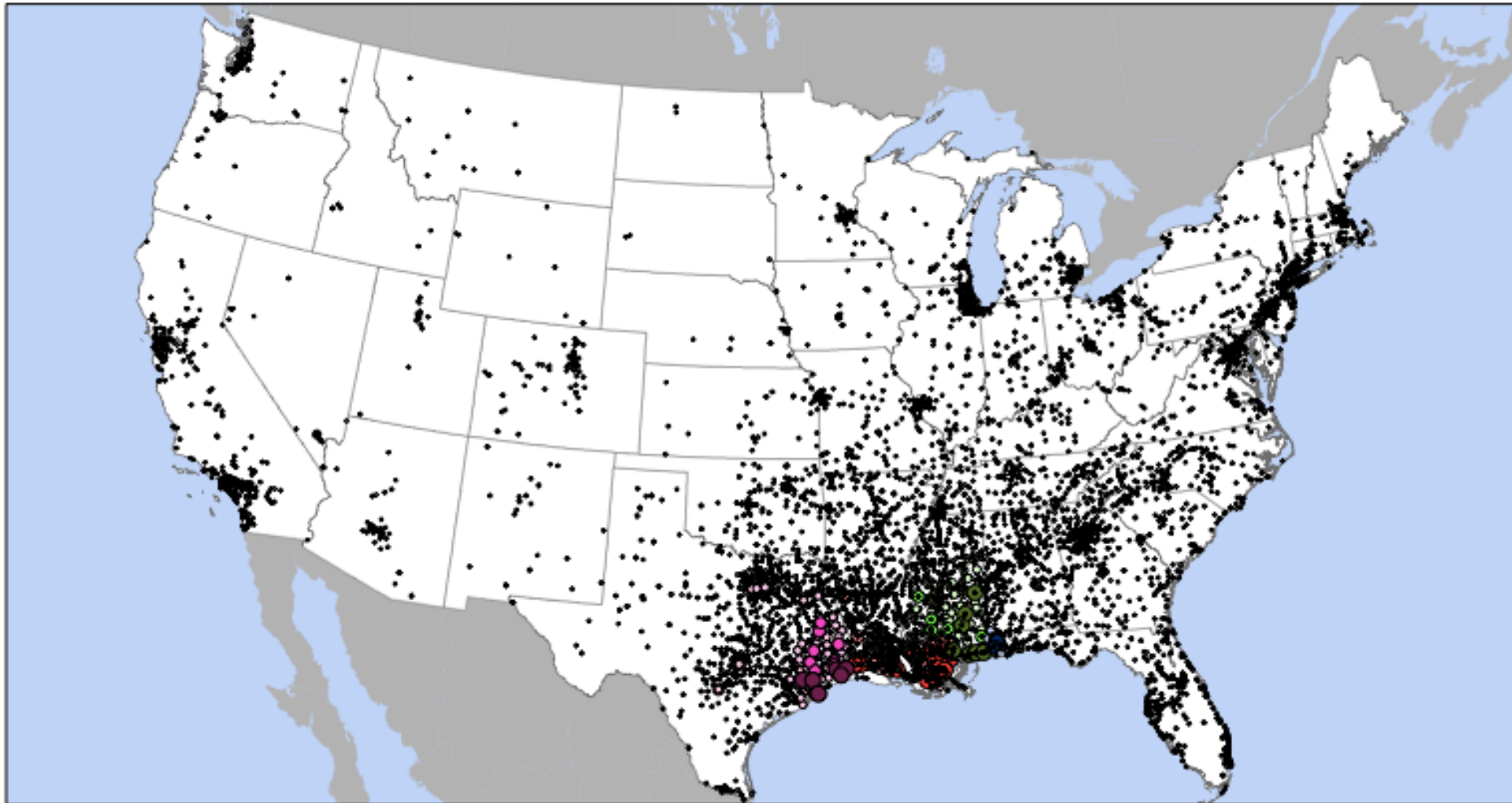








**Locations of Katrina/Rita Applicants from Louisiana, Mississippi, Alabama, and Texas as of 10/31/05**



**FEMA**



The New York Times

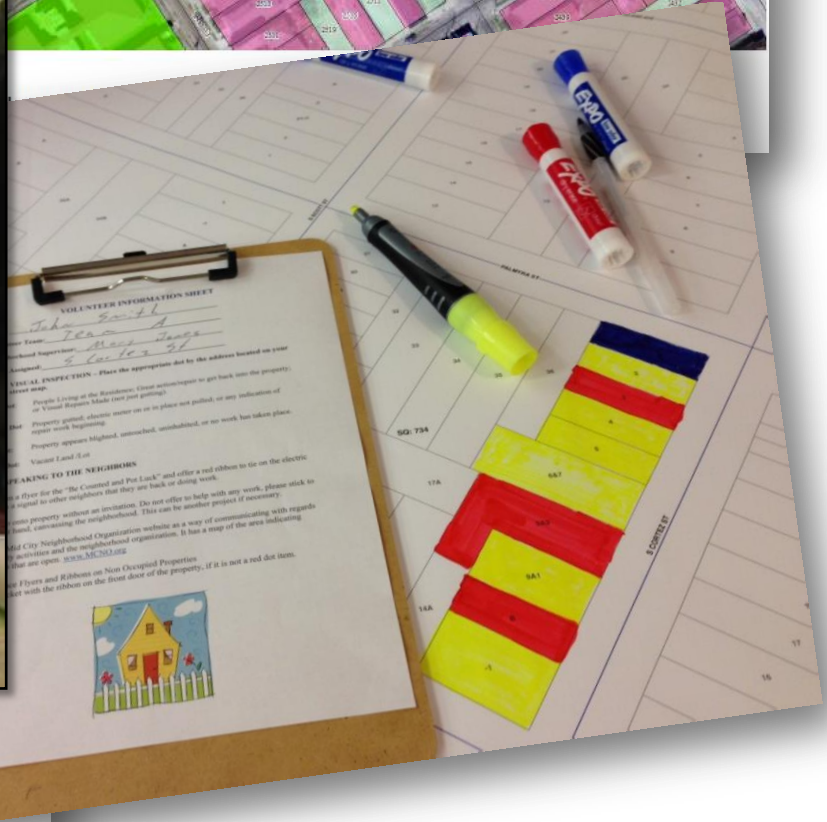
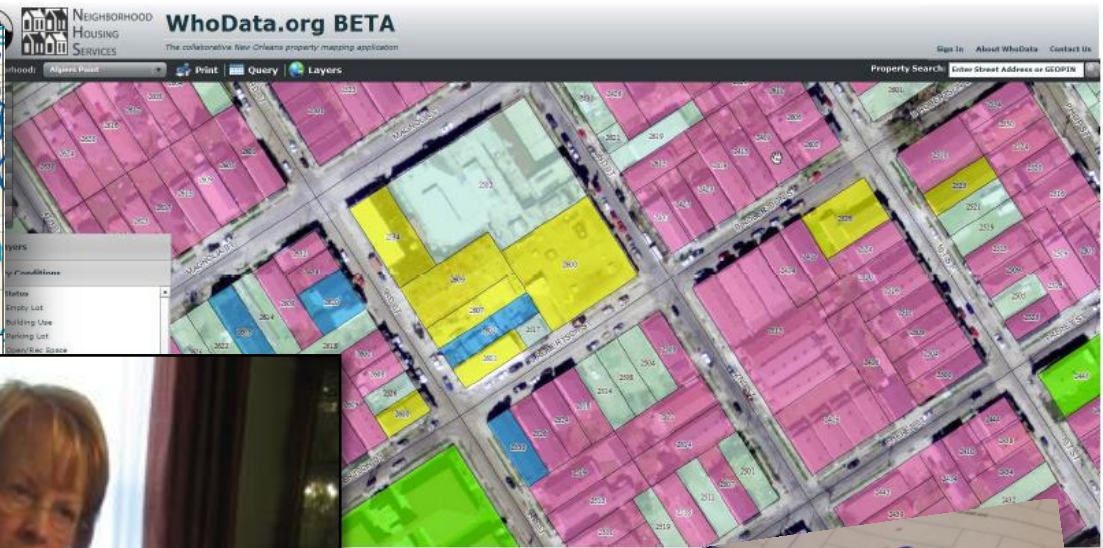
## After Katrina, a Trickle of Returnees

CLIFFORD J. LEVY

Published: November 13, 2005

... Matt Fellowes of the Brookings Institution in Washington, which will soon begin publishing a Katrina Index on the rebuilding effort, said it had been **easier gathering data for Iraq than for New Orleans.**

# Laine/Flake Properties Land Elevations and Land Use



# Crowdsourcing scoring of property condition



## DESIGN CHALLENGES

Large scale (149,000 parcels)

Cost-effective enough to repeat

Limit boots-on-ground collecting data

Reduce scoring bias between nbhds

Field Name	Status
Vacant/Built	Building
Overgrown	False
Bldg Use	Residential
Bldg Condition	Good
Occupancy	Occupied
Elevation Type	Elevated – crawl space



# **“Operation Tropic Thunder”**

## **DESIGN CHALLENGES**

- 1. Large scale (149,000 parcels)**
- 2. Cost-effective enough to repeat**
- 3. Limit boots-on-ground collecting data**
- 4. Reduce scoring bias**



# IMAGE COLLECTION



*separated  
from*

# PROPERTY SCORING



GOOD



FAIR



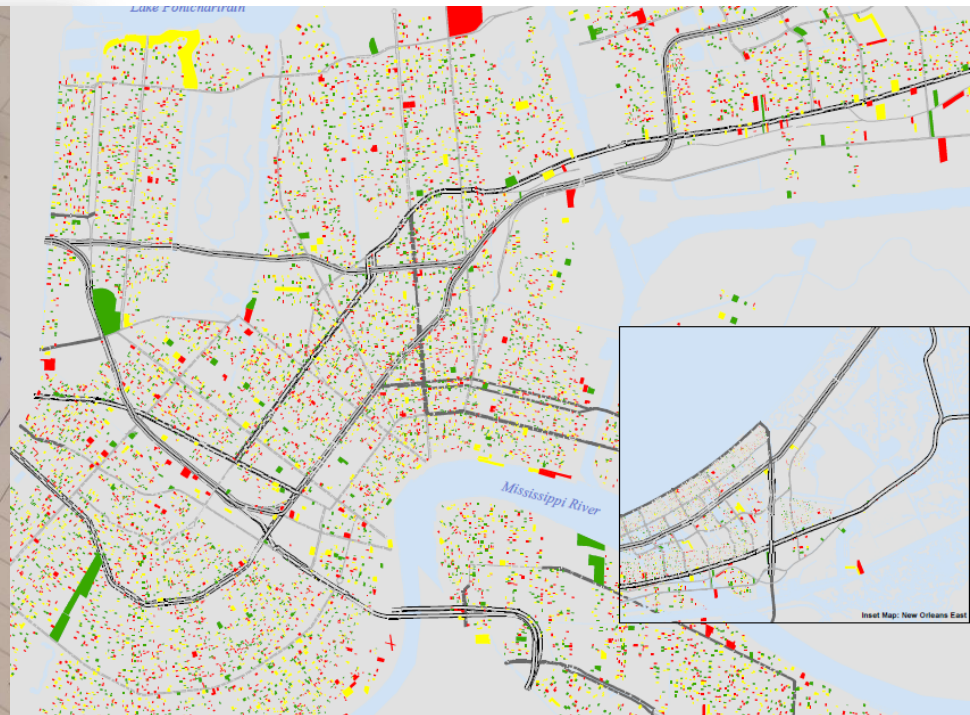
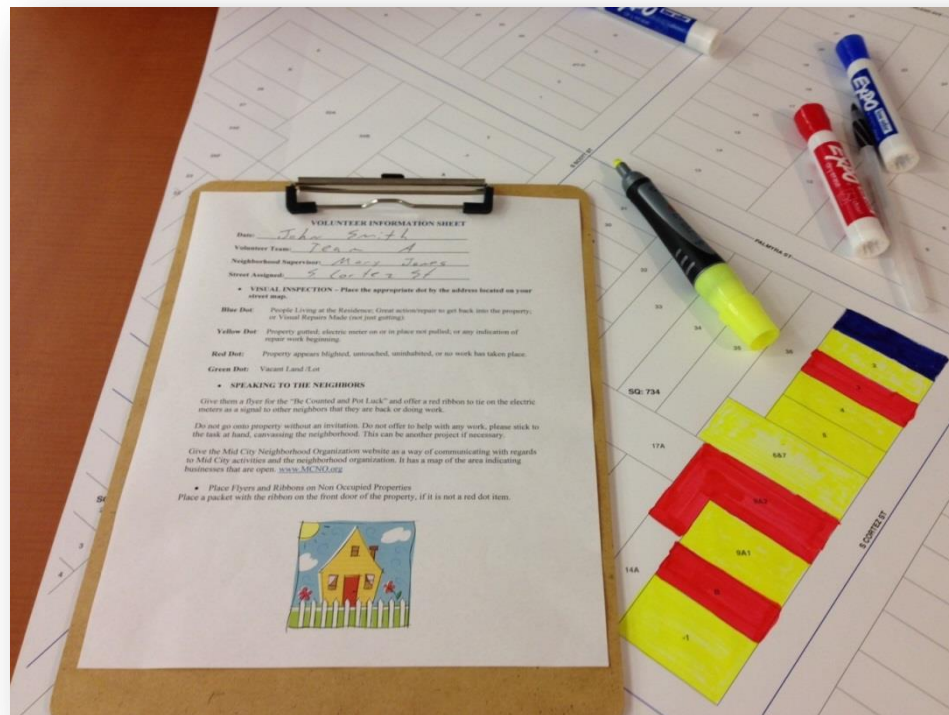
POOR

# Randomized parcels across city reduce bias, generate statistically meaningful data

Sequential parcels along street

vs.

Random parcels across city



gis.nola.gov



212 ✓

Skip ►►



## Property Survey

Is there a structure on the property?



Yes

No

Not sure

Is the lot overgrown? ?

Yes

No

Not sure



CITY OF NEW ORLEANS



# Operation Tropic Thunder – Where is it now?

# **Case Study from Sandy (immediate aftermath)**



Emmeline Zhao Become a fan  
emmeline.zhao@huffingtonpost.com

# Hurricane Sandy Gas Station Crisis Sees Solution From New Jersey High School Students

Posted: 11/02/2012 8:56 am EDT | Updated: 11/09/2012 6:55 pm EST



"We started this up last night, we just wanted to help... I personally needed gas, we all needed gas. So we started out with five points and just had more friends and high school students get involved."

-Dayana Bustamante, Franklin High student

# **Lantern Live DESIGN CHALLENGES**

- 1. Apply crowdsourced open/closed status to specific gas stations**
- 2. Critical mass of users to keep gas station status current throughout event**
- 3. Provide users with enough detail so they trust the data and can act on it**

1115 Louisiana Avenue, New C

GAS STATIONS MAP LIST

Top 20 results found.

✓ = Open ? = Uncertain ✗ = Closed

✓ Louisiana Super Saver

1641 Louisiana Ave  
New Orleans, LA 70115

Directions Call Tag Status

✓ Quick Stop

3331 Carondelet St  
New Orleans, LA 70115

Directions Call Tag Status

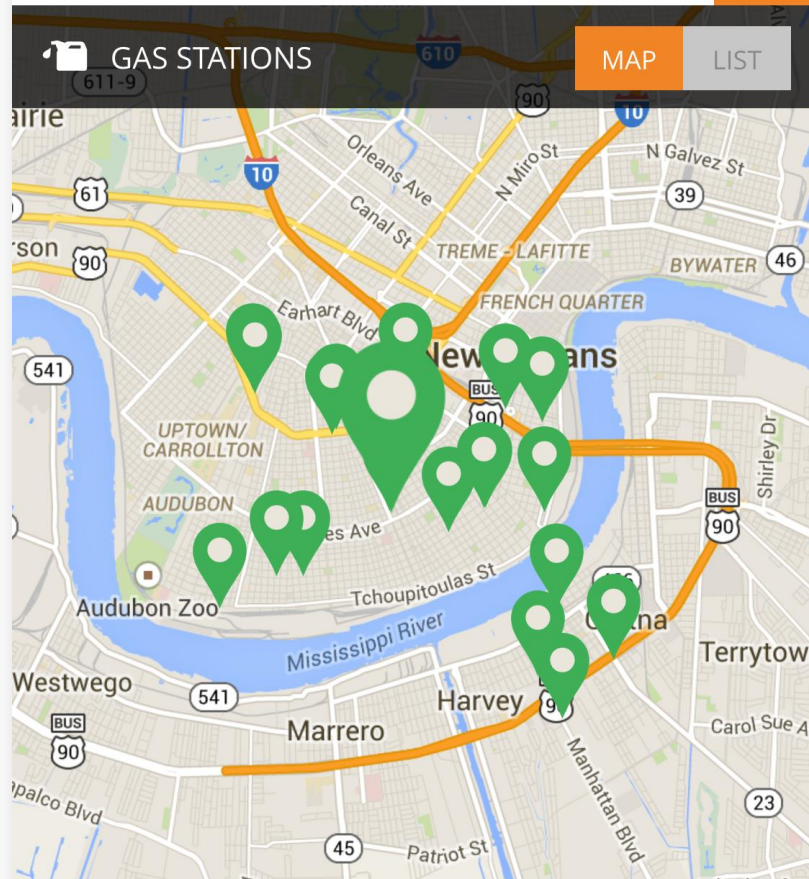
✓ Magazine Spur

2727 Magazine St  
New Orleans, LA 70130

Directions Call Tag Status

1115 Louisiana Avenue, New C

GAS STATIONS MAP LIST



✓ Louisiana Super Saver

1641 Louisiana Ave  
New Orleans, LA 70115

Directions Call Tag Status



# Biggest challenge: Getting enough users

1. Publicize standardized hashtags of **#gotfuel**, **#nofuel** and encourage people in impacted areas to **enable location services** on social media
2. Create an **open read/write API** so 3rd party apps could both consume status of gas stations, and also allow their users to tag status within their app

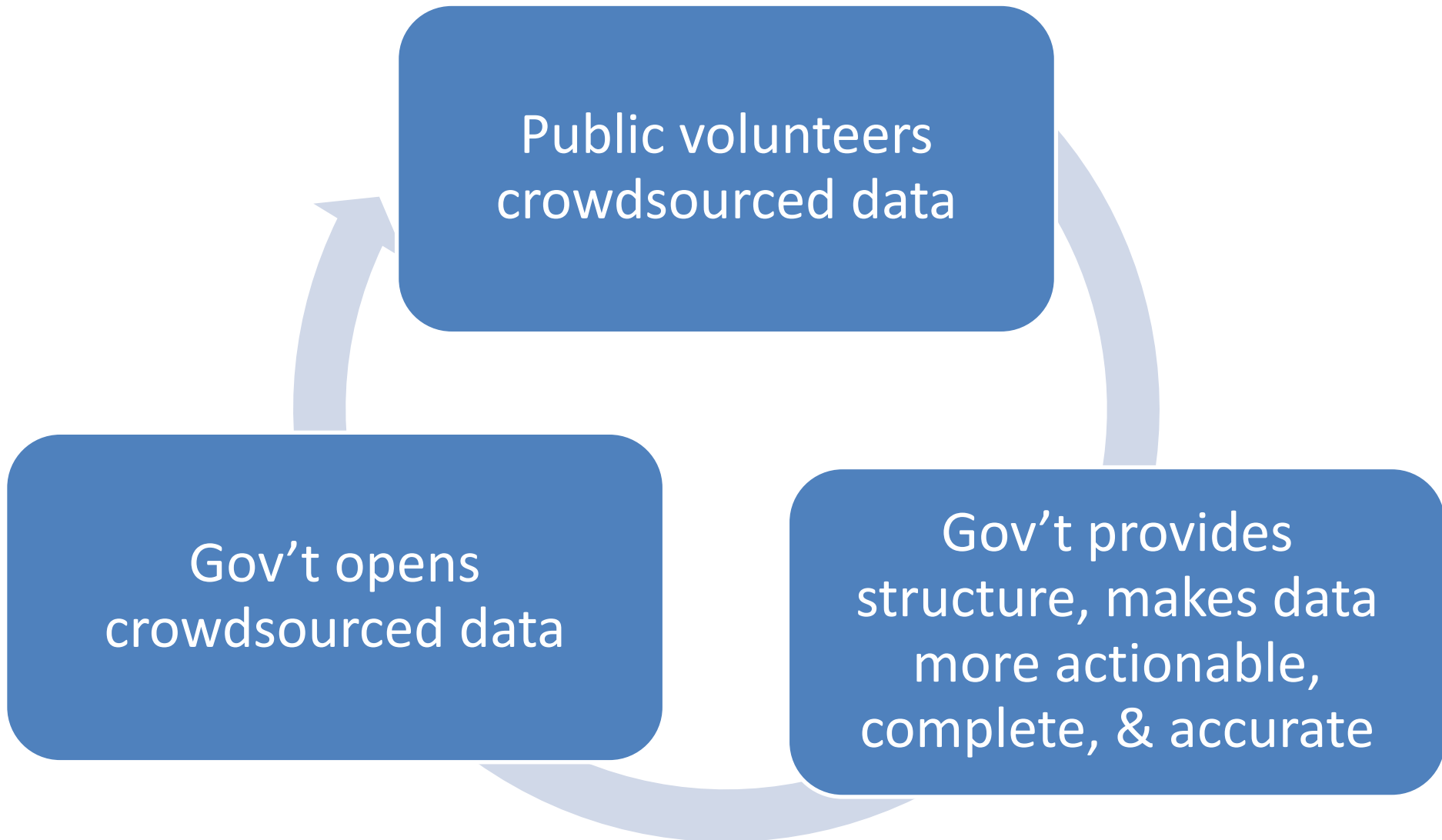




## Second Biggest challenge: Personally Identifiable Information (PII)

- How to allow users to drill down to see the info behind the colored dots?
- Solution? Non-governmental entity owns the crowdsourcing API
- Drafting RFI to collect ideas

# The Virtuous Circle



# The Virtuous Circle

